

# PATENT ABSTRACTS OF JAPAN

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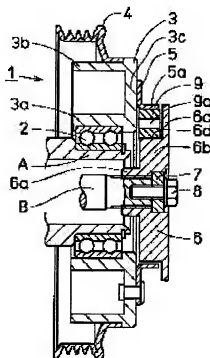
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## (54) POWER TRANSMISSION DEVICE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a power transmission device allowing simple mounting on a follower side apparatus.

**SOLUTION:** A rotor 3 where to a pulley 4 made by sheet metal processing is supported rotatably by a cylindrical projection A of a compressor. A holding member 5 provided with a plurality of recesses 5a protruding outward in radial direction is fixed to the rotor 3 by rivets. A follower side rotary member 6 provided with a plurality of recesses 6d recessed inward in radial direction is fixed to the rotary shaft B of the compressor by means of spline fitting. The disc part 3c of the rotor 3 and a flange 6c on the member 6 are positioned opposing in the axial direction, and a coupling member 9 formed cylindrically from plastics or rubber is fitted in the space bounded by the recesses 5a and 6d, disc part 3c, and flange 6c. When the rotary shaft B of the compressor is locked, the coupling member 9 is broken and the power transmitted is shut off.



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CLAIMS

[Claim(s)]

[Claim 1]A driving-side rotating member which was supported via a bearing by cylinder lobe characterized by comprising the following formed in housing of follower side apparatus, enabling free rotation, and was connected with it by driving-side apparatus and a belt, A power transmission device connected by a coupling member which the follower side rotating member with which the axis of rotation of said follower side apparatus projected out of said cylinder lobe was equipped is provided, and said driving-side rotating member and said follower side rotating member damage at the time of overload generating.

An inner cylinder part into which an outer ring of spiral wound gasket of said bearing fitted.

An outside cylinder part in which a pulley groove on which said belt is hung was formed.

Said driving-side rotating member in which a disk part which connected these inner cylinder part and an outside cylinder part was provided.

A driving-side attachment component in which two or more crevices projected to radial outside to a body prolonged in a projection direction of said axis of rotation while being fixed to the side of said disk part are formed.

A boss section in which two or more crevices hollow to a radial inner side while fitting into a radial inner side of a body of this driving-side attachment component were formed.

Said follower side rotating member in which a flange which was prolonged from the end face of this boss section to radial outside, and countered in a disk part and an axial direction of said driving-side rotating member was provided.

Said coupling member which fitted into two or more space demarcated by crevice of said driving-side rotating member, crevice of said follower side rotating member, and a disk part of said driving-side rotating member and a flange of said follower side rotating member.

[Claim 2]A power transmission device forming said coupling member cylindrical of a plastic or rubber, and damaging it in a power transmission device indicated to claim 1 at the time of overload generating.

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**DETAILED DESCRIPTION**

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the power transmission device connected by the coupling member which a driving-side rotating member and the follower side rotating member damage at the time of overload generating.

[0002]

[Description of the Prior Art]What is explained to JP,6-39105,Y as a conventional power transmission device forms an insertion hole in the side which counters in the axial direction of a driving-side rotating member (belt pulley) and the follower side rotating member (hub) separately, and has structure which carried out press fitting of the end of a coupling member to the insertion hole. And when an overload occurs to follower side apparatus (compressor), a coupling member is damaged under the power of driving-side apparatus (automobile engine).

[0003]

[Problem(s) to be Solved by the Invention]Since the outer ring of spiral wound gasket of a bearing is pressed when pressing fit in the insertion hole of a driving-side rotating member two or more coupling members by which press fitting was carried out, for example to the follower side rotating member, such a power transmission device must press a coupling member fit, where a driving-side rotating member is fixed. Therefore, the work which assembles a power transmission device to follower side apparatus is troublesome. This invention aims to let wearing to follower side apparatus provide the power transmission device made simply.

[0004]

[Means for Solving the Problem]This invention in order to attain such a purpose a power transmission device of this invention, A driving-side rotating member which was supported via a bearing by cylinder lobe formed in housing of follower side apparatus, enabling free rotation, and was connected with it by driving-side apparatus and a belt, The follower side rotating member with which the axis of rotation of said follower side apparatus projected out of said cylinder lobe was equipped is provided, and a power transmission device connected by a coupling member which said driving-side rotating member and said follower side rotating member damage at the time of overload generating is characterized by comprising the following:

An inner cylinder part into which an outer ring of spiral wound gasket of said bearing fitted.

An outside cylinder part in which a pulley groove on which said belt is hung was formed.

Said driving-side rotating member in which a disk part which connected these inner cylinder part and an outside cylinder part was provided.

A driving-side attachment component in which two or more crevices projected to radial outside to a body prolonged in a projection direction of said axis of rotation are formed while being fixed to

the side of said disk part, A boss section in which two or more crevices hollow to a radial inner side were formed while fitting into a radial inner side of a body of this driving-side attachment component, Said follower side rotating member in which a flange which was prolonged from the end face of this boss section to radial outside, and counter in a disk part and an axial direction of said driving-side rotating member was provided, Said coupling member which fitted into two or more space demarcated by crevice of said driving-side rotating member, crevice of said follower side rotating member, and a disk part of said driving-side rotating member and a flange of said follower side rotating member.

[0005]A coupling member is formed cylindrical of a plastic or rubber, and a power transmission device of this invention is damaged at the time of overload generating.

[0006]

[Embodiment of the Invention]The power transmission device shown in drawing 1 and drawing 2 as this embodiment of the invention is explained. The top view of the power transmission device in which drawing 1 fractured the part, and drawing 2 are the sectional views of drawing 1. The driving-side rotating member which the compressor for car air-conditioners as follower side apparatus (continuation variable-capacity type compressor) is equipped with the power transmission device of these drawings, and is connected by the automobile engine side apparatus and the belt as driving-side apparatus. The follower side rotating member with which the axis of rotation of a compressor is equipped, and the coupling member which connects these rotating members are provided.

[0007]The sheet metal belt pulley 4 which fitted into the peripheral face of the bearing 2 by which the driving-side rotating member 1 fitted into the cylinder lobe A of a compressor, and the slip off stop was carried out by the snap ring, the rotor 3 to which the outer ring of spiral wound gasket of this bearing 2 fitted into, and the slip off stop was carried out, and this rotor 3, and was welded is formed. The inner cylinder part 3a to which, as for the rotor 3, the bearing 2 fitted into inner skin, and the outside cylinder part 3b by which the sheet metal belt pulley 4 was fixed to the peripheral face, The section which has the circular sulcus which the disk part 3c which connected each end of these inner cylinder part 3a and the outside cylinder part 3b was formed, and carried out the opening to the housing side of a compressor is a U-shaped ring member.

[0008]The section is being fixed to the side of the disk part 3c of this driving-side rotating member 1 by the rivet of plurality [ attachment component / 5 / annular / driving-side ] by the shape of an L character. Two or more crevices 5a projected to radial outside are formed in the part which divided the circumferential direction equally at this driving-side attachment component 5.

[0009]The disc-like flange 6c to which the follower side rotating member 6 extended to radial outside from the boss section 6a by which the spline hole where spline fitting of the axis end of the axis of rotation B of a compressor was carried out was formed in the center, the major-diameter body 6b of this boss section 6a, and the end of this major-diameter body 6b is formed. Two or more crevices 6d hollow to the radial inner side are formed in the part which divided the circumferential direction equally at the major-diameter body 6b. Same number formation was carried out and this crevice 6d and the crevice 5a of the driving-side attachment component 5 have countered by the radial direction. While the flange 6c counters in the disk part 3c and axial direction of the rotor 3, the outer periphery part set the end face and the crevice of the crevice 5a between the driving-side attachment components 5, and has countered.

[0010]The corrosion plate 7 is being fitted in and fixed to such a follower side rotating member 6 of shape by the end of the spline hole, and the corrosion plate 7 is dashed by the axis of rotation B by carrying out spline fitting to the axis of rotation B. And the axis of rotation B is equipped

with the follower side rotating member 6 at one by inserting the bolt 8 from the center hole of the corrosion plate 7, and thrusting into the tapped hole of the axis of rotation B.

[0011]The coupling member 9 which has connected the driving-side rotating member 1 and the follower side rotating member 6 is formed cylindrical of a plastic or rubber. The center hole 9a is formed so that it may be easy to damage at the time of overload generating. The such-shaped coupling member 9 fits into each space demarcated by the crevice 5a of the driving-side attachment component 5, the crevice 6d of the follower side rotating member 6, and the disk part 3c of the rotor 3 and the flange 6c of the follower side rotating member 6, and is held.

[0012]A compressor drives the power transmission device which consists of such a structure while the driving-side rotating member 1 connected by the coupling member 9 and the follower side rotating member 6 rotate to one, since the power of an automobile engine is transmitted via a belt. If the axis of rotation B of a compressor locks and an overload occurs in the follower side rotating member 6, since the crevice 5a of the driving-side attachment component 5 precedes with a hand of cut from the crevice 6d of the follower side rotating member 6 under the power of an automobile engine, the coupling member 9 will be damaged.

[0013]Since the bearing 2 is beforehand fitted in and fixed to the rotor 3, this power transmission device is supported by the cylinder lobe A of a compressor by fitting into the cylinder lobe A and carrying out the slip off stop of the bearing 2 by a snap ring, enabling free rotation of the driving-side rotating member 1. It changes into the state where the compressor was stood, as [ become / the axis of rotation A / vertical ], and while fitting in separately and putting the coupling member 9 on the disk part 3c of the rotor 3 in each crevice 5a of the driving-side attachment component 5, after carrying out alignment of the crevice 6d, it is assembled by equipping the axis of rotation B with the follower side rotating member 6.

[0014]Therefore, after carrying out alignment of the tip of two or more coupling members which press fitting was carried out to the belt pulley (this embodiment of the invention rotor), and were projected like the conventional power transmission device, and two or more insertion holes formed in the flange of the follower side rotating member, Difference of the follower side rotating member is carried out to the structure with which the axis of rotation is equipped, carrying out press fitting of the coupling member to an insertion hole, and the thrust which acts on the outer ring of spiral wound gasket of the bearing 2 at the time of an assembly is reduced.

[0015]When an overload occurs and the coupling member 9 is damaged, while removing the coupling member 9 which removed the follower side rotating member 6 from the axis of rotation B, and was damaged, Since what is necessary is just to hold so that the new coupling member 9 may be engaged with the crevice 5a of the driving-side attachment component 5, and the crevice 6d of the follower side attachment component 6 in a hand of cut with the assembly procedure mentioned above, There is also no time and effort, such as removing the fragment of the coupling member which remained in the insertion hole of a driving-side rotating member or the follower side rotating member like the conventional power transmission member, and exchange of the coupling member 9 can be performed simply.

[0016]Although the driving-side rotating member 1 which fitted in and welded [ of the rotor 3 / outside cylinder ] the sheet metal belt pulley 4 as this embodiment of the invention 3b was explained, a pulley groove is good for the peripheral face of the outside cylinder part 3b also considering the rotor 3 by which forming of rolling was carried out as the driving-side rotating member 1. Although division arrangement of the coupling member 9 was carried out at the circumferential direction, it is good also as the annular coupling member 9 which has two or more engagement parts which fit into the crevices 5a and 6d, and a connecting part which connects each engagement part.

[0017]

[Effect of the Invention]The driving-side rotating member by which the power transmission device of this invention was supported by the cylinder lobe of follower side apparatus via the bearing enabling free rotation, The driving-side attachment component in which two or more crevices projected to radial outside to the body prolonged in the projection direction of the axis of rotation of follower side apparatus are formed while being fixed to this driving-side rotating member, The boss section in which two or more crevices hollow to the radial inner side were formed while fitting into the radial inner side of the body of this driving-side attachment component, Said follower side rotating member in which the flange which was prolonged from the end face of this boss section to radial outside, and countered in the disk part and axial direction of said driving-side rotating member was provided, Since it was made the structure which provided the coupling member which fitted into two or more space demarcated by the crevice of said driving-side rotating member, the crevice of said follower side rotating member, and the disk part of said driving-side rotating member and the flange of said follower side rotating member, A coupling member is held so that it may engage with the crevice of a driving-side attachment component, and the crevice of the follower side attachment component in a hand of cut. Therefore, it is not necessary to carry out press fitting of the coupling member to the insertion hole formed in the driving-side rotating member or the follower side rotating member, and the power transmission device which can perform wearing to follower side apparatus simply can be provided. And the power transmission device of this invention can prevent scattering to the exterior of the coupling member damaged by overload generating.

[0018]Since the power transmission device of this invention tended to have damaged a coupling member when it is formed cylindrical of a plastic or rubber and an overload occurs, it can prevent certainly the accident of the belt which the axis of rotation of follower side apparatus was locked, and was hung on the driving-side rotating member being turned off.

[Translation done.]

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**TECHNICAL FIELD**

[Field of the Invention]This invention relates to the power transmission device connected by the coupling member which a driving-side rotating member and the follower side rotating member damage at the time of overload generating.

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**PRIOR ART**

[Description of the Prior Art]What is explained to JP,6-39105,Y as a conventional power transmission device forms an insertion hole in the side which counters in the axial direction of a driving-side rotating member (belt pulley) and the follower side rotating member (hub) separately, and has structure which carried out press fitting of the end of a coupling member to the insertion hole. And when an overload occurs to follower side apparatus (compressor), a coupling member is damaged under the power of driving-side apparatus (automobile engine).

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## EFFECT OF THE INVENTION

[Effect of the Invention]The driving-side rotating member by which the power transmission device of this invention was supported by the cylinder lobe of follower side apparatus via the bearing enabling free rotation, The driving-side attachment component in which two or more crevices projected to radial outside to the body prolonged in the projection direction of the axis of rotation of follower side apparatus are formed while being fixed to this driving-side rotating member, The boss section in which two or more crevices hollow to the radial inner side were formed while fitting into the radial inner side of the body of this driving-side attachment component, Said follower side rotating member in which the flange which was prolonged from the end face of this boss section to radial outside, and countered in the disk part and axial direction of said driving-side rotating member was provided, Since it was made the structure which provided the coupling member which fitted into two or more space demarcated by the crevice of said driving-side rotating member, the crevice of said follower side rotating member, and the disk part of said driving-side rotating member and the flange of said follower side rotating member, A coupling member is held so that it may engage with the crevice of a driving-side attachment component, and the crevice of the follower side attachment component in a hand of cut. Therefore, it is not necessary to carry out press fitting of the coupling member to the insertion hole formed in the driving-side rotating member or the follower side rotating member, and the power transmission device which can perform wearing to follower side apparatus simply can be provided. And the power transmission device of this invention can prevent scattering to the exterior of the coupling member damaged by overload generating.

[0018]Since the power transmission device of this invention tended to have damaged a coupling member when it is formed cylindrical of a plastic or rubber and an overload occurs, it can prevent certainly the accident of the belt which the axis of rotation of follower side apparatus was locked, and was hung on the driving-side rotating member being turned off.

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**TECHNICAL PROBLEM**

[Problem(s) to be Solved by the Invention]Since the outer ring of spiral wound gasket of a bearing is pressed when pressing fit in the insertion hole of a driving-side rotating member two or more coupling members by which press fitting was carried out, for example to the follower side rotating member, such a power transmission device must press a coupling member fit, where a driving-side rotating member is fixed. Therefore, the work which assembles a power transmission device to follower side apparatus is troublesome. This invention aims to let wearing to follower side apparatus provide the power transmission device made simply.

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MEANS

[Means for Solving the Problem]This invention in order to attain such a purpose a power transmission device of this invention, A driving-side rotating member which was supported via a bearing by cylinder lobe formed in housing of follower side apparatus, enabling free rotation, and was connected with it by driving-side apparatus and a belt, The follower side rotating member with which the axis of rotation of said follower side apparatus projected out of said cylinder lobe was equipped is provided, and a power transmission device connected by a coupling member which said driving-side rotating member and said follower side rotating member damage at the time of overload generating is characterized by comprising the following:

An inner cylinder part into which an outer ring of spiral wound gasket of said bearing fitted.

An outside cylinder part in which a pulley groove on which said belt is hung was formed.

Said driving-side rotating member in which a disk part which connected these inner cylinder part and an outside cylinder part was provided.

A driving-side attachment component in which two or more crevices projected to radial outside to a body prolonged in a projection direction of said axis of rotation are formed while being fixed to the side of said disk part, A boss section in which two or more crevices hollow to a radial inner side were formed while fitting into a radial inner side of a body of this driving-side attachment component, Said follower side rotating member in which a flange which was prolonged from the end face of this boss section to radial outside, and countered in a disk part and an axial direction of said driving-side rotating member was provided, Said coupling member which fitted into two or more space demarcated by crevice of said driving-side rotating member, crevice of said follower side rotating member, and a disk part of said driving-side rotating member and a flange of said follower side rotating member.

[0005]A coupling member is formed cylindrical of a plastic or rubber, and a power transmission device of this invention is damaged at the time of overload generating.

[0006]

[Embodiment of the Invention]The power transmission device shown in drawing 1 and drawing 2 as this embodiment of the invention is explained. The top view of the power transmission device in which drawing 1 fractured the part, and drawing 2 are the sectional views of drawing 1. The driving-side rotating member which the compressor for car air-conditioners as follower side apparatus (continuation variable-capacity type compressor) is equipped with the power transmission device of these drawings, and is connected by the automobile engine side apparatus and the belt as driving-side apparatus, The follower side rotating member with which the axis of rotation of a compressor is equipped, and the coupling member which connects these rotating members are provided.

[0007]The sheet metal belt pulley 4 which fitted into the peripheral face of the bearing 2 by which the driving-side rotating member 1 fitted into the cylinder lobe A of a compressor, and the slip off stop was carried out by the snap ring, the rotor 3 to which the outer ring of spiral wound gasket of this bearing 2 fitted into, and the slip off stop was carried out, and this rotor 3, and was welded is formed. The inner cylinder part 3a to which, as for the rotor 3, the bearing 2 fitted into inner skin, and the outside cylinder part 3b by which the sheet metal belt pulley 4 was fixed to the peripheral face, The section which has the circular sulcus which the disk part 3c which connected each end of these inner cylinder part 3a and the outside cylinder part 3b was formed, and carried out the opening to the housing side of a compressor is a U-shaped ring member.

[0008]The section is being fixed to the side of the disk part 3c of this driving-side rotating member 1 by the rivet of plurality [ attachment component / 5 / annular / driving-side ] by the shape of an L character. Two or more crevices 5a projected to radial outside are formed in the part which divided the circumferential direction equally at this driving-side attachment component 5.

[0009]The disc-like flange 6c to which the follower side rotating member 6 extended to radial outside from the boss section 6a by which the spline hole where spline fitting of the axis end of the axis of rotation B of a compressor was carried out was formed in the center, the major-diameter body 6b of this boss section 6a, and the end of this major-diameter body 6b is formed. Two or more crevices 6d hollow to the radial inner side are formed in the part which divided the circumferential direction equally at the major-diameter body 6b. Same number formation was carried out and this crevice 6d and the crevice 5a of the driving-side attachment component 5 have countered by the radial direction. While the flange 6c counters in the disk part 3c and axial direction of the rotor 3, the outer periphery part set the end face and the crevice of the crevice 5a between the driving-side attachment components 5, and has countered.

[0010]The corrosion plate 7 is being fitted in and fixed to such a follower side rotating member 6 of shape by the end of the spline hole, and the corrosion plate 7 is dashed by the axis of rotation B by carrying out spline fitting to the axis of rotation B. And the axis of rotation B is equipped with the follower side rotating member 6 at one by inserting the bolt 8 from the center hole of the corrosion plate 7, and thrusting into the tapped hole of the axis of rotation B.

[0011]The coupling member 9 which has connected the driving-side rotating member 1 and the follower side rotating member 6 is formed cylindrical of a plastic or rubber. The center hole 9a is formed so that it may be easy to damage at the time of overload generating. The such-shaped coupling member 9 fits into each space demarcated by the crevice 5a of the driving-side attachment component 5, the crevice 6d of the follower side rotating member 6, and the disk part 3c of the rotor 3 and the flange 6c of the follower side rotating member 6, and is held.

[0012]A compressor drives the power transmission device which consists of such a structure while the driving-side rotating member 1 connected by the coupling member 9 and the follower side rotating member 6 rotate to one, since the power of an automobile engine is transmitted via a belt. If the axis of rotation B of a compressor locks and an overload occurs in the follower side rotating member 6, since the crevice 5a of the driving-side attachment component 5 precedes with a hand of cut from the crevice 6d of the follower side rotating member 6 under the power of an automobile engine, the coupling member 9 will be damaged.

[0013]Since the bearing 2 is beforehand fitted in and fixed to the rotor 3, this power transmission device is supported by the cylinder lobe A of a compressor by fitting into the cylinder lobe A and carrying out the slip off stop of the bearing 2 by a snap ring, enabling free rotation of the driving-side rotating member 1. It changes into the state where the compressor was stood, as [ become / the axis of rotation A / vertical ], and while fitting in separately and putting the coupling member 9 on the disk part 3c of the rotor 3 in each crevice 5a of the driving-side attachment

component 5, after carrying out alignment of the crevice 6d, it is assembled by equipping the axis of rotation B with the follower side rotating member 6.

[0014]Therefore, after carrying out alignment of the tip of two or more coupling members which press fitting was carried out to the belt pulley (this embodiment of the invention rotor), and were projected like the conventional power transmission device, and two or more insertion holes formed in the flange of the follower side rotating member, Difference of the follower side rotating member is carried out to the structure with which the axis of rotation is equipped, carrying out press fitting of the coupling member to an insertion hole, and the thrust which acts on the outer ring of spiral wound gasket of the bearing 2 at the time of an assembly is reduced.

[0015]When an overload occurs and the coupling member 9 is damaged, while removing the coupling member 9 which removed the follower side rotating member 6 from the axis of rotation B, and was damaged, Since what is necessary is just to hold so that the new coupling member 9 may be engaged with the crevice 5a of the driving-side attachment component 5, and the crevice 6d of the follower side attachment component 6 in a hand of cut with the assembly procedure mentioned above, There is also no time and effort, such as removing the fragment of the coupling member which remained in the insertion hole of a driving-side rotating member or the follower side rotating member like the conventional power transmission member, and exchange of the coupling member 9 can be performed simply.

[0016]Although the driving-side rotating member 1 which fitted in and welded [ of the rotor 3 / outside cylinder ] the sheet metal belt pulley 4 as this embodiment of the invention 3b was explained, a pulley groove is good for the peripheral face of the outside cylinder part 3b also considering the rotor 3 by which forming of rolling was carried out as the driving-side rotating member 1. Although division arrangement of the coupling member 9 was carried out at the circumferencial direction, it is good also as the annular coupling member 9 which has two or more engagement parts which fit into the crevices 5a and 6d, and a connecting part which connects each engagement part.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the power transmission device shown as this embodiment of the invention, and is the top view which fractured the part.

[Drawing 2] It is a sectional view of drawing 1.

[Description of Notations]

- 1 Driving-side rotating member
- 3 Rotor
- 5 Driving-side attachment component
- 6 Follower side rotating member
- 9 Coupling member

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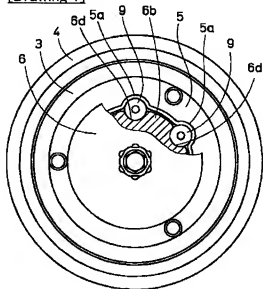
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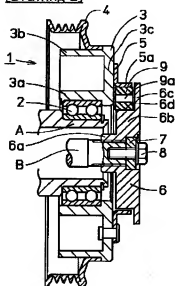
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DRAWINGS

[Drawing 1]



[Drawing 2]



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